October 23, 2009

Ms. Lisa Bradley
AECOM

Dear Ms. Bradley:

EPA conditionally approves the Remedial Investigation (RI) Report submitted by ENSR (AECOM) on December 5, 2008. EPA's approval is conditional upon making edits to the RI Report that address the attached combined comments of USEPA, IDEM, NPS, and the P.I.N.E.S. community group. Please submit a redline version of the corrected RI Report within 30-days of receipt of this letter.

In accordance with the schedule of the April 5, 2004 Administrative Order on Consent, a human health and ecological risk assessment is due 60-days from your receipt of this conditional approval.

If you have any questions on these comments, please contact me at (312) 353-4367 or at drexler.timothy@epa.gov.

GENERAL COMMENTS

1. The mathematical ground water flow model generated by AECOM, the Pines Site PRP contractor, ~~appears to reflect the historical location of groundwater contamination. However,~~continues to have serious issues despite multiple reviews, comments and technical input from stakeholders. It is the conclusion of EPA that the current mathematical groundwater model cannot be used to accurately
~~with the validity of the model remain despite multiple reviews and modifications. EPA has concluded that the mathematical groundwater model, in its current form, cannot be used to accurately~~ predict groundwater flow directions from CCB source areas under hypothetical future hydraulic conditions. Specific failures in the model, as confirmed by EPA's Kerr Lab Ground Water Technical Support Center, occur in two critical areas: 1) multiple calibration-related concerns remain, including overall poor calibration of the model to existing baseline conditions, particularly in the source area of interest within and immediately surrounding Yard 520, and 2) the model contains unsupported stratigraphic constructs and extreme thinning and thickening of model layers (layer 4 in particular), that could serve to erroneously distort from reality the true groundwater flow and contaminant migration at the site (in effect, the contractor placed a linear barrier to groundwater flow immediately north of Yard 520). The RI Report should, therefore, be completed omitting the mathematical groundwater model and its interpretations of groundwater flow direction and contaminant

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transport. Once human health and ecological risks, if any, are identified in the Site risk assessment, any groundwater remedial alternatives developed should account for the absence of a useable site groundwater model and the resulting increased uncertainty with regard to future flow of contaminated groundwater. In particular, this includes any groundwater remedial alternatives developed to address risks from contaminated groundwater to: 1) current and future residents in the study area not connected to municipal water and, 2) IDNL.

~~1.~~2. You have insufficient evidence that all groundwater flow from the area of investigation flows into the Brown Ditch system. There are sufficient gaps in the monitoring well network that leave questions as to the flow pattern of all groundwater in the system.

~~2.~~3. The detection limit for many sediment samples was too high. Therefore, you cannot state: 1) that CCB-related contaminants are present in only two Brown Ditch samples, 2) that there is no spatial pattern to CCB-related contamination in sediments, and 3) that CCB-related contaminant concentration in sediments is primarily due to grain size.

4. A source (concentration) term has not been obtained for the various COC's from the interior portion of either landfill cell. This will require assumption/use of a more conservative number for a source term in the risk assessment than those concentrations observed in landfill cell perimeter wells.

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~~4.~~5. There is insufficient evidence to state that there is not significant migration of CCB-related contaminants to groundwater when CCBs are used as road sub-base. There are areas within the Pines remedial investigation that have recorded significant volumes of CCB that were used to level roads. These areas also have CCB-related groundwater contamination. In addition, paving of roadways may reduce the migration of CCB-derived contaminants, but many roads within the study area that utilize CCBs are unpaved.

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~~5.~~6. There is insufficient evidence to state that CCB-derived contaminants in groundwater do not extend to areas where private wells are located outside of the area currently supplied by municipal water. The radial plots, piper diagrams, and boron isotope ratios presented cannot be used to definitively claim that the metals present in all monitoring and private wells outside of the area supplied by municipal water are either exclusively or mostly from either deep geologic formations or other contaminant sources such as landfills.

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a. The boron ratio for PW010 is identical to boron ratios of the Yard 520 monitoring wells. The piper diagrams show that the water chemistry in this well is similar to locations associated with CCB-contaminants (MW106, MW109, and MW122). This well has had boron concentrations over 10x background and is located in proximity to a private well that had boron concentrations above human health screening levels (figure 1-6).

The proximity to significant CCB sources near these wells make a CCB-related source for the metals a possibility.

b. The high groundwater boron concentration in the area south of Yard 520 and Brown Ditch (figure 4.34) requires additional explanation.

~~6.~~7. The possibility of groundwater use in the future cannot be discounted. Furthermore, EPA groundwater standards indicate that where attainable, the groundwater should be protected for beneficial use as a drinking source (40 CFR Parts 300.430, 141, 142, and 143) (see specific comments #4 and 10 below) and that groundwater contamination should not be allowed to migrate and further contaminate the aquifer and other media (e.g. sediment; surface water; or wetland) (40 CFR Part 300.430). In the absence of a useable groundwater model, the PRP's cannot demonstrate that plume migration into additional downgradient areas has stopped~~.~~

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~~7.~~8. The latest version of the Regional Screening Levels for Chemical Contaminants at Superfund Sites should be used in this report and in the subsequent risk assessment.

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~~8.~~9. The report is using Maximum Contaminant Levels (MCLs) values to evaluate the contaminants of concerns. MCLs are not risk-based values. Because EPA recommends following a conservative approach in determining risk, the contaminants of concerns should be evaluated by comparison of detected contaminant concentration to the risk-based concentration.

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10. The site conceptual model remains seriously flawed and is not fully developed. The PRP contractor has provided little data or convincing arguments to technical reviewers to support their most basic concepts or to alleviate EPA and stakeholder concerns with the conceptual model and critical elements that appear to be ignored or unaddressed in the RI. In other instances certain factual information appears omitted or selectively presented. This could seriously limit the public's understanding of the site and historical changes in the groundwater flow direction that accompanied construction of the landfill cells. The conceptual model discussion is highly selective and fails to discuss the full range of potential factors controlling migration pathways of contaminants via groundwater and surface water that appear to be affected by fly ash leachate from Yard 520 and other locations of fly ash fill.

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DETAILED COMMENTS

Executive Summary:

Groundwater Flow Modeling

Remove after first half paragraph and remainder of section. See general comment #1.

Chemistry of Background Soil

Edit last sentence to read "None of these soils *appear to be* affected by CCB-derived constituents…" No laboratory examination was performed to confirm the complete absence of CCB-derived constituents. The identification of CCB material by visual observation alone cannot be made conclusively in the field. Microscopic investigation of the background samples is needed.

Chemistry of Groundwater

You have insufficient evidence that groundwater concentrations of CCBs in the vicinity of road sub-base are not above HH risk-based screening levels. (See general comment #4) Please remove this statement.

The RI Report lacks sufficient evidence that CCB-constituents in groundwater do not extend to any areas where there is no city water. Please remove this statement.

Chemistry of Surface Water

There does not appear to be sufficient evidence that Al concentrations are generally higher in the upgradient samples. Aside from some anomalous concentrations from some upgradient locations during specific sampling events, Al concentrations do not appear to have a trend in concentration. Please remove this statement.

Chemistry of Sediments

There is insufficient evidence to state that when the percent fines are taken into account, total metals concentrations are similar to upgradient levels and there is no consistent spatial pattern that can be attributed to CCB-derived constituents (See general comment #3). Please remove this statement.

The statement is made many times that "except for impacts due to constituents in groundwater" the metals concentration in sediments most likely to be impacted by site contaminants is consistent with upgradient locations. Impacts to sediment from groundwater-borne contaminants contaminate sediment just as effectively, if not more so, than atmospheric and other contaminant sources and therefore cannot be used to discount the site-related sediment contamination.

Fate and Transport

There is no information presented to attribute metals in sediment to "other sources". Please either specify these other sources and supporting data or remove this statement.

Section 2.4: Background samples should be screened by microscopy to confirm the absence of CCBs.

Section 2.6 The statement, “At each location, the soil material was inspected to ensure suspected CCBs were not present.” must be edited to “…the soil material was visually inspected to minimize the possibility that suspected CCBs were present.”

The background soil set must be divided into sandy upland and organic wetland soils in order to facilitate meaningful comparisons with background.

Section 2.12: EPA has determined that the numerical groundwater flow model generated by AECOM for the RI Report is not useable. Significant issues with the model remain after two versions have been developed. EPA does not consider that the significant additional time and effort that would be needed to upgrade the model is warranted. EPA will expect that the draft Human Health and Ecological Risk Assessment, due 60-days after receipt of these comments, will conservatively estimate exposures to both human and ecological receptors from identified site-related CCB contaminant sources.

Section 2.17: The discussion of arsenic migration presented by the Respondents on page 5-7 rightly indicates that, “Based of the groundwater data in the vicinity of Yard 520, attenuation processes appear to be very effective in removing As from groundwater”. We agree that the processes of sorption and/or co-precipitation identified by the respondents are important mechanisms in removing arsenic from groundwater. However, the unanswered question remains. Where is the arsenic that is being removed from the groundwater, at what depth, how concentrated is it now, and how concentrated will it eventually become? The data shows that groundwater migrating laterally away from Yard 520 encounters REDOX conditions and/or sorptive materials that remove arsenic from solution. Arsenic concentration is, therefore, increasing in soil at some location, at some depth, and over some distance between Yard 520 and downgradient wells as it is removed from the water. This same process is likely to be occurring downgradient of other sizeable flyash deposits outside of Yard 520. Sampling of clay at the base of the shallow aquifer along the edge of Yard 520 does not address the question of where and by how much arsenic is accumulating in soils between the disposal cell and downgradient wells. State how you will address this uncertainty and potential human health and ecological exposures, particularly with respect to the risk assessment.

Section 2.18: This section should state that the ecological risk assessment will be prepared in accordance with “Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments (EPA 540-R-97-006)”. Additional information can be found in EPA ECO Update/Ground Water Forum Issue Paper: Evaluating Ground-Water/Surface-Water Transition Zones in Ecological Risk Assessment (EPA-540-R-06-072).

Section 2.18.2: The ecological habitat map should not be used to exclude samples for analysis under the ERA. All samples with potential receptor exposure should be evaluated for ecological risk. The ERA should include Yard 520.

Section 3.4.2: You state that “(the Type III South area)…is expected to have little, if any, interaction with the surrounding groundwater system.” This should be edited to state that although little groundwater interaction may be occurring from the Type III South Cell of Yard 520, historical seeps in the south cell may indicate that meteoric water may be filling parts of the cell causing overland releases.

The discussion of the construction of the North and South Areas at Yard 520 indicates that the North Area was capped with a “vegetated clayey soil cover”. No mention is made of the cover applied to the South Area. Water level data collected from PZ001 as part of the RI shows that precipitation is penetrating the cover. This recharge coupled with natural mounding of the water table under topography (hills) composed of fine-grained~~,~~ materials such as fly ash, result~~sing~~ in high hydraulic head in North Yard 520. Assuming that the soil cover on the South Area is similar to that on the North Area, we should expect that head within the topography of the South Area will be at least as high, and perhaps higher, since flow out the sides and bottom should be slowed relative to flow from the North cell by the presence of the 3-foot clay side-walls and the removal of the underlying aquifer. Since PZ001 is the only data point within either of the disposal areas, leachate elevation in both the North and South Areas should reflect the development of a mound consistent with PZ001. Please show leachate levels in both the north and South Areas consistent with highest measured elevation of leachate at PZ001 or install piezometers in both cells to obtain actual current head data in Yard 520.

The assumption that the South Area of Yard 520 has no interaction with the surrounding aquifer ~~is~~ hydrologically is based on no empirical data. Installation and continuous monitoring of piezometers inside and outside of Yard 520 would be necessary to demonstrate lack of a hydraulic connection. Water will move as easily through the soil cover above the ash within south Yard 520 as it does in north Yard 520. We agree that the clay walls slow migration, but completely removing the south cell from the shallow system is not appropriate. Please include a reasonable approximation of hydrogeologic conditions within and surrounding South Yard 520.

Section 3.4.3: With respect to the potential for water levels to have risen in response to the provision of municipal water to the residents of Pines, in the absence of a mathematical model, estimates must be made of any change to water levels in the Pines area utilizing historical water level information and annual precipitation values. Stating that there is no indication that water levels are currently rising does not address the issue. If water has appeared in some basements where it had not occurred previously, the presumption can be made that water levels are rising. Unfortunately, it is just not known if the cause is natural (e.g. due to increased precipitation) or from the effects (anthropogenic) of the new water supply system (MWS) or a combination of both.

Pg 3-11: Please remove the statement that “Within the Type II (North) Area at Yard 520, (groundwater) gradients are vertical downward, as represented by the difference in hydraulic heads between PZ001 and MW-2/P-2.” These wells are not clustered and are not well suited for determining vertical hydraulic gradients. You cannot, therefore, make a definitive determination of the nature of the vertical gradient beneath Yard 520 using these wells.

Piezometer PZ001 was the only control point used by the PRP's to define the water table surface within the mounded area of fly ash for both the North and South Landfill cells. This limitation caused definition of the water table/phreatic surface to be poorly constrained within the landfill cells. Without needed levels of control (piezometers/wells) in such critical (source) areas which would be expected to further substantiate the groundwater mound apparent in PZ-001 and the water tables conformance with topography, groundwater contour maps should reflect the rule-of-thumb that the phreatic surface (water table) tends to follow/conform to the topographic profile in humid areas, particularly where finer-grained materials are present (materials of silt and/or clay size). All subsequent draft/final groundwater contour RI maps should conform to this hydrogeologic principle where fine-grained material such as silt size fly ash is present as topographic highs or mounds. Unless the PRP contractor can demonstrate with empirical data from existing or new monitoring wells that this standard/conventional rule-of –thumb is not applicable at the site, revision of all groundwater maps will be necessary. PZ-001 provides empirical evidence for a groundwater mound under the North Landfill cell topographic high. Contractor theories unsupported by empirical evidence is insufficient to permit simply drawing groundwater contours encircling this single well without regard for landfill cell morphology and the significant changes in topography between the two landfill cells caused by the intervening ditch. The PRP contractor's continued failure to correct water table contour maps in responding to these and previous comments will result in an RI that misleads the public and was a contributing factor in the observation by the EPA Kerr lab that "several wells near Yard 520 show a poor match to average observed ground-water elevations" and that "the model requires extensive calibration"

Section 3.4.5: You state that no information was found concerning the Lawrence Dump. Information was gathered about the waste, water level measurements, and water quality data from this landfill. Please correct this statement.

3) Section 3.7: Two of the photos shown in this section appear to be incorrectly associated. The upper photo appears to show boiler slag and the center photo, bottom ash.

Section 3.7.1 The statement that identification (of CCBs) by visual observation alone cannot always be made conclusively in the field should add that the absence of description of CCBs in field logs should also not necessarily be interpreted to mean that CCB material is entirely absent.

Pg. 3-25: "The suspected CCBs observed during the visual inspections typically included a higher percentage of materials not identified as suspected CCBs." Add that some residential areas, however, did contain in excess of 50% identified CCB.

Section 3.7.2 Add that some residential areas, however, did contain in excess of 50% identified CCB. Also add that CCBs were used as residential yard fill, in some cases, up to the foundation of the residence.

Section 3.8: As previously stated, the numerical groundwater model developed by AECOM will not be used for the RI Report. This section must be edited to remove conclusions based on that model.

4) Section 3.10: This section should state that the ecological risk assessment will be prepared in accordance with "Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments (EPA 540-R-97-006)"

Section 3.10.1 page 3-29. The text states that "Potential drinking water pathways are not complete for residents who are serviced by municipal water." The possibility of groundwater use in the future cannot be ruled out. Furthermore, EPA groundwater standards indicate that where attainable, the groundwater should be protected for beneficial use as a drinking source (40 CFR Parts 300.430, 141, 142, and 143) (See general comment #2 above). Please edit.

5) Section 3.10.2: Another bullet in this section should state that the potential exposure of plants and herbivores in terrestrial areas through shallow groundwater will be evaluated.

Section 4.2.1: The evaluation of background soil inappropriately mixes different soil types (granular soil and organic soil). Organic soils located in low-lying wetland areas are distinctly different and will have a distinctly different chemical composition than granular dune sands. Comparison of granular soils consisting primarily of dune sands from neighborhoods and back yards against a background data set that also includes organic wetland soils is inappropriate and misleading. Inappropriately including multiple soil types into a single background population results in data set statistics that are overly broad and are not descriptive of any soil type. Background needs to be established for each of soil types in order to allow accurate comparisons against background for that soil type. Please establish separate background ranges for organic and granular soil types.

Section 4.2.3: National background levels of any contaminant is not relevant to a site-specific investigation. Please remove.

Section 4.4.4: Remove the statement that "…the predominant direction of groundwater flow is vertically downward into the sands underlying the Yard 520 fill materials." (See comment Section 3.4.3).

Other indicators of CCBs: Add Fe, Mn, As, and Mo to the list of indicators.

Iron and Manganse: Edit to state that the highest concentrations of Fe and Mn do appear to be CCB-related.

Section 4.4.5: Include Fe, Mn, As, and Mo to the list of constituents related to CCB.

“There does not seem to be migration to groundwater where suspected CCBs were used in smaller volumes.” The statement that CCBs as road sub-base is an example where CCB-derived contaminants do not appear to migrate is not substantiated. Perhaps use in small volumes as road sub-base results in an inconsequential release of CCB-derived contaminants. At the Pines Site, many of the roads that utilize CCBs used many feet of thickness to fill low areas as a part of road construction. It is not clear that the road sub-base in these instances does not contribute to the contamination of groundwater. Please revise.

<u>Section 4.4.6</u> The discussion of concentration trends over time ignores the fact that the starting concentrations in many of the graphed wells appear to be well above background concentrations, likely representing impacts from CCBs in existence at the start of the data set. The scale of the concentration graphs is such that significant changes in concentration appear to be minimal. Contrary to the conclusion of this section, review of the graphs imbedded in the text of this section shows that well MW-6, located on the northern edge of Yard 520, clearly shows increasing boron concentrations over the period of the record. This observation is consistent with increased head in Yard 520 driving more flow away from the landfill toward the north. Similar graphs should be prepared for all monitoring wells so that those showing increasing or decreasing concentration trends can be identified. The scale of the new graphs should be chosen to allow concentration trends to be identified.

<u>Section 4.4.7</u> There is insufficient evidence to state that “…in the vicinity of smaller amounts of CCBs, for example, used only as road sub-base material, CCB-derived constituents do not appear to migrate to groundwater. See Section 4.4.5 comment. Please edit.

The following statement must be revised. “Groundwater south of the West Branch of Brown Ditch is not impacted by CCBs….Groundwater in this area does not have elevated concentrations of CCB indicators (B, SO_4, Ca, Mg, Sr, and Mo).” The wells south of Yard 520 have elevated potentially CCB-related contaminants. Specifically, the boron concentration in wells PW07 and PW08 are over 20X background concentrations. Even if Brown Ditch is an effective barrier to water flow from the north, Railroad Avenue is a potential CCB contaminant source. If you are assuming that the contaminants present in these wells are exclusively from landfills to the south, more evidence is needed. See also general comment #5.

You have insufficient evidence to state that based on the RI analytical and hydrogeologic data all of the groundwater with CCB-derived constituents flows into the Brown Ditch system. Please remove.

Likewise, the RI data does not definitively prove that the extent of CCB-derived constituents in groundwater does not extend to areas where private wells are located outside the area currently supplied by municipal drinking water (see previous comments) Please remove.

Construction of individual iso-concentration maps for each parameter detected above the screening level, for each sampling event, is required. Please prepare standard iso-concentration maps for each parameter detected above screening levels during each sampling event.

Section 4.5.6 Edit bullet 6 to state that total and dissolved Fe concentrations at sampling locations near Yard 520 were up to three to five times higher than the background locations.

Section 4.6.1: In referring to upstream sediment characteristics you state, “Based on their locations, samples from these locations are believed to be unrelated to CCBs.” In an area where CCB has been disposed in many locations, it is inadequate to depend solely on location as the indicator that a sample is unaffected by CCB’s. The upstream sediment data set must be evaluated microscopically to insure that none of the samples is CCB-impacted.

6) Section 4.6.2.2, Interpretation of Metals in Brown Ditch Sediment, last bullet:

The detection limits for the Brown Ditch sediment samples are too high to interpret whether CCB-related contaminants are entering IDNL (see previous comments). Please correct this statement.

If dry weight analysis is causing confusion then wet weight analysis should be run on the sediment samples.

Section 4.6.2.3: Remove the statement that boron was not detected in Brown Ditch sediments with the exception of SW022 and SW026. Boron was not detected in other samples only because the detection limit for most Brown Ditch samples was too high. SW009, SW012, SW013, SW014, SW016, SW022, and SW023 all potentially contain boron concentrations that are CCB-derived.

You have insufficient evidence that the fine-grained sediment samples contain increases in metals solely because they are fine grained and that there is no spatial pattern because of the high detection limits of the samples. Remove this statement.

Section 5.0: There is insufficient evidence that all groundwater flow is to the Brown Ditch system (see previous comments). Please remove.

Section 6.2: Delete results of groundwater flow model (see general comments).

Section 6.3: You have insufficient evidence that use of CCBs as road base does not result in the migration of CCB-derived contaminants into groundwater (see general comments). You likewise have insufficient control to state that all groundwater containing CCB-derived contaminants flows into the Brown Ditch system. Please remove.

Groundwater
Delete the following statements: “Groundwater south of the West Branch of Brown Ditch is not impacted by CCBs.” and “CCB-derived constituents in groundwater do not extend to areas where private water wells are located outside the area currently supplied by municipal drinking water.” See general comment #5 and comments to Section 4.4.7.

Sediments
Remove statement that boron was detected in only two locations of Brown Ditch. The high detection limits mask potential contamination to Brown Ditch and IDNL from CCB-related contaminant sources (see general comments).

Remove statement that when percentage fines is taken into account, total metals concentrations are similar to upgradient concentrations and there is no consistent spatial pattern that can be attributed to CCB-derived constituents. Again, the high detection limits mask the potential contamination.

Section 6.5: Edit reference to use of CCBs as road sub-base. See comments above.

Remove statement that there is no consistent spatial pattern to site-related sediment contamination (see previous comments).

Section 6.6: The ecological risk assessment should focus on constituents that are present at concentrations above risk based screening levels. Background levels of constituents are an issue for risk management, not risk assessment.

Figure 3-21: Deep upland soil is also a factor in root uptake, bioaccumulation in earthworms and ingestion in burrowing mammals. A deep upland soil box should be added.

Figure 3-21: Bird ingestion of CCBs as grit is another exposure route. Please edit.

Figure 3-21: Vermivorous small mammals and birds should be included as receptors. Amphibians should be included as receptors due to sensitivity to CCBs.

Figure 3-21: An arrow should connect the runoff/erosion box with the sediment/porewater box. This captures the contribution of upland soils to sediment through erosion.

Figure 3-21: Ecological receptor exposure occurs along rights of way and these areas should be included in the ERA.

Figure 4-34: Either this figure must reflect the results of residential sampling (see figure 1-6) or another figure must represent the total groundwater data collected to-date.

The report is using the USEPA Region 9 PRG Table dated October 2004. This table has been changed and updated, e.g., the tap water screening levels for lithium has been lowered to 7.3E+01 µg/L. The latest version of the Regional Screening Levels for Chemical Contaminants at Superfund Sites must be used in this report.

Tables 4-1 and 4-2. The report is using Maximum Contaminant Levels (MCLs) values to evaluate the contaminants of concerns. MCLs are not risk-based values. Because EPA recommends following a conservative approach in determining risk, the contaminants of concerns should be evaluated by comparison of detected contaminant concentration to the risk-based concentration.

Tables 4-1 and 4-2. The adjustment of non-cancer Preliminary Remediation Goals PRGs) was not done in the screening to identify chemicals of potential concern (COPCs). EPA policy states that for screening of chemicals detected in soil, water and air in human health risk assessments, the Regional Screening Levels for Chemical Contaminants at Superfund Site to be adjusted downward to correspond to a target HQ of 0.1 rather than 1, without consideration of the target organs. This is done to ensure that chemicals with additive effects are not prematurely eliminated during screening.

15) Table 4-3: No value for sulfide is provided. EPA Region 4 lists an ecological surface water screening level of .002 mg/l. Please use that reference.

16) Table 4-3: No value is provided for suspended solids. Macdonald et al, A compendium of Environmental Quality Benchmarks, list values of 10-25 mg/l over background as benchmarks for total suspended solids. Please use that reference.

17) Table 4-4: Information should be provided on the assumptions and inputs used to calculate the ecological screening levels for radionuclides using the Biota Concentration Guides.

Comments on the December 5, 2008 Evaluation of Data Collected Under the Yard 520 Sampling and Analysis Plan

General Comment

EPA is concerned with the radiological water results, as reported. For example, the combined result (Ra-226 + Ra-228) for sample GP004ICB092305B exceeds the 5pCi/L MCL, but the uncertainty exceeds the result. In the same sample, the U-238 result is 161 pCi/L where the uncertainty listed is +/- 346 pCu/L. This is an indication of inadequate counting time. Longer counting times would have reduced the counting uncertainty. In addition, the certificates of analysis do not provide counting times so a thorough evaluation is not possible.